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ELECTRIC LAMPS

THAT YOU CAN MAKE OR MODERNIZE

Leaflet No. 317

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RURAL ELECTRIFICATION ADMINISTRATION • U. S. DEPARTMENT OF AGRICULTURE

FOR BETTER LIGHT

A properly designed table lamp in your home makes reading, studying, and sewing easier and more comfortable. It conserves eyesight, saves energy, and gives your room new attractiveness. You can make one, cheaply and easily, with materials readily available.

YOU NEED THESE MATERIALS

2 1″ x 2″ x 15″ (from 1″ x 2″ x 30″ hardwood) for stem of lamp.

2 ¾″ x 7″ x 7″ (from ¾″ x 7″ x 14″ lumber) for lamp base.

[1] 1 lamp socket with switch (threaded for ⅛″ pipe).

1 ⅛″ pipe nipple 1″ or 1½″ long (to fit socket above).

1 shade holder to fit socket (supports diffusing bowl; not needed with threaded plastic bowl).

1 diffusing bowl (8″ for 100-watt or 9⅜″ for 150-watt bulb) or wide harp for 5″ diameter 150-watt R–40 white indirect-light bulb.

1 shade (white lined with bottom diameter 16″).

1 100-watt or 150-watt bulb or 150-watt indirect-light bulb.

1 lamp cord 9-foot (not smaller than No. 18 AWG UL approved conductor).

1 outlet plug (preferably of rubber, easy to grasp).

2 No. 10 wood screws; glue for wood, fine sandpaper, tools.

First read the directions from start to finish. Better examine the sketch closely as you read.

If you use soft wood, you will need to run the wires through a pipe in the stem, in order to meet safety requirements.

STEPS IN MAKING A BASE AND STEM

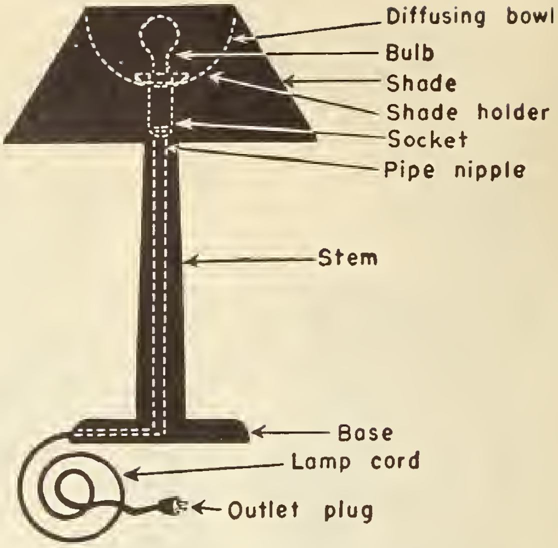
BASE

The base is made of two flat pieces each ¾″ thick (before planing and sandpapering) glued together.

Follow the steps below in making the base. The lower piece should be 7″ square, and the upper piece 6½″ square.

1. Cut the pieces to dimensions given above—plane and sandpaper.

2. Round the upper edges and corners with wood rasp and sandpaper for smooth appearance.



3. Drill a 1″ hole through the center of the upper piece. Cut a groove ¼″ wide and ¼″ deep on the under side of this piece, from the edge of the hole to the edge of the piece. Rub this groove with sandpaper to provide a smooth channel for the cord through the base.

STEM

The stem is made of two pieces 1″ x 2″ x 15″ grooved and shaped as sketched, then glued together.

1. Cut the pieces, then cut a V-groove exactly 7/16″ wide and ¼″ deep the length of each piece.

2. Sandpaper the groove so that all rough spots which might wear the cord are removed.

3. Trim and plane the stem so that it is 1¾″ square at one end and 1″ square at the other. Rub with fine sandpaper to make smooth.

4. Glue the pieces together so the grooves match to form a square hole in the center of the stem for the lamp cord. This hole will be about 5/16″ square.

5. Round off the last half-inch of the large end of the stem to fit into a 1″ hole in the base.

EASY TO MODIFY DESIGN

This plan shows only one design of lamp. You may want to make a square stem from four ¼″ pieces, or from a single piece 2″ square with a ⅜″ hole through it lengthwise. Or a round stem turned on a lathe to any desired pattern, or a plain round stem wrapped in thick cord, reed, or raffia tacked and glued into place and shellacked or painted for an interesting appearance.

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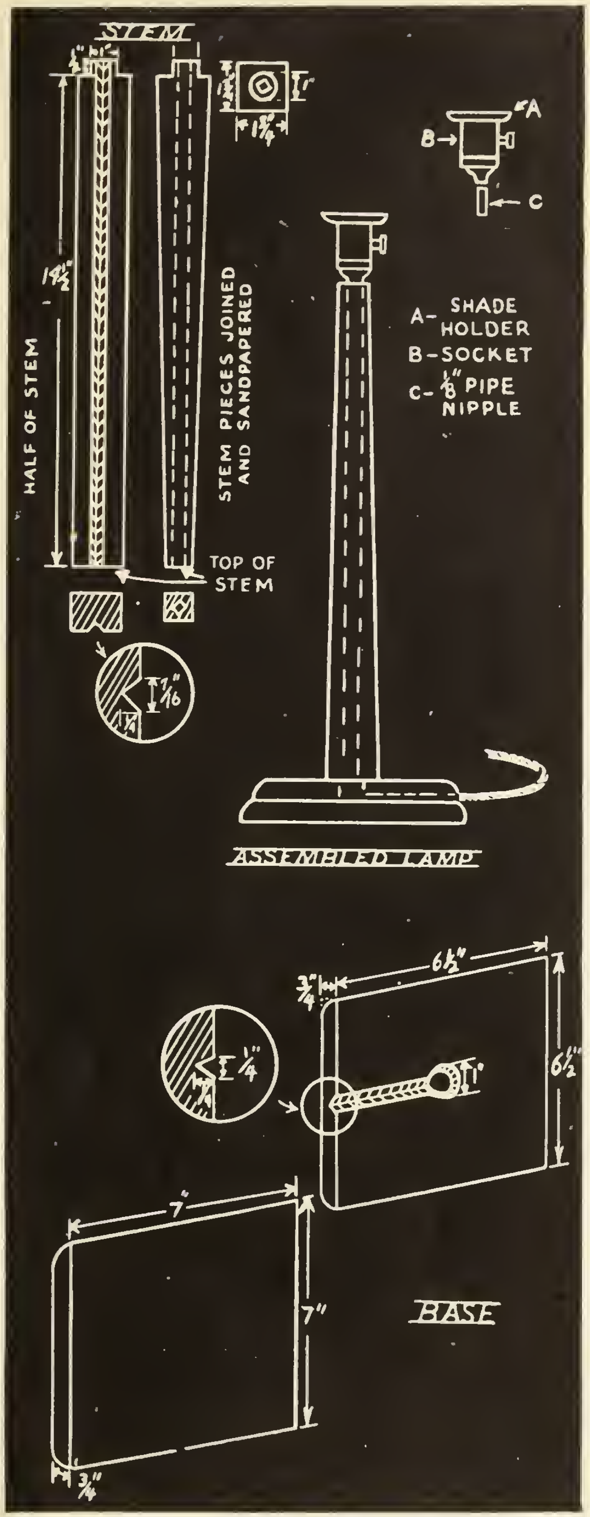
[1] Be sure to buy a socket with a three-position switch if you wish to use a 3-light bulb (50–100–150-watt).



You may want to make a *round base* with two ¾'' pieces dressed to ⅝'', the bottom piece 7'' in diameter, the top piece 5'' in diameter. Or . . .

A *square base* of similar dimensions to the round one, edges can be rounded. Or . . .

An *octagonal base* from two ¾'' pieces, 7½'' and 5½'' square, by cutting off their corners. Cut the design in paper first.

HOW TO ASSEMBLE LAMP

1. Thread the lamp cord through the base and through the stem.
2. Glue stem and base together. Two flat-headed wood screws [2] through the base into the stem will strengthen the joint.
3. Thread the cord through the pipe nipple. Screw nipple into hole at top of stem so that about 3/16'' of it extends above the stem. To do this more easily, attach the socket to the nipple temporarily; grasp the socket to turn the nipple.
4. To insure a solid union remove the nipple, add glue and replace nipple.
5. Screw socket base onto the nipple, attach cord to socket connectors and assemble socket.
6. Attach outlet plug to end of cord.
7. Screw the shade holder onto the socket. Fit glass diffusing bowl onto shade holder. Then turn screws to hold it firmly in place. With a threaded plastic bowl, simply screw it on socket. Insert bulb and place the shade on the completed lamp.

WALL LAMPS

A portable wall lamp which may be hung on the wall exactly where you want to get added light, is a welcome addition to a room. Ready-made ones are reasonably priced, but you can also make pin-to-wall lamps easily at home for your own use or for gifts. Two wall lamps above a desk or table give good lighting at the study center.

YOU NEED THESE MATERIALS

1 45° triangle hard wood consisting of one 6¾'' and one 8'' arm, ¾'' thick.
1 9'' x 1⅝'' x ¾'' rectangle base for attaching lamp to wall.
1 ⅛'' plywood strip 9'' x ½'' or ⅝'' to cover [3] cord, or ¼'' plywood strip 10½'' x ¾''.
1 push-through switch lamp socket.[3]
1 socket with cap threaded for ⅛'' pipe nipple.
1 pipe nipple ⅛'' diameter, 1½'' long.

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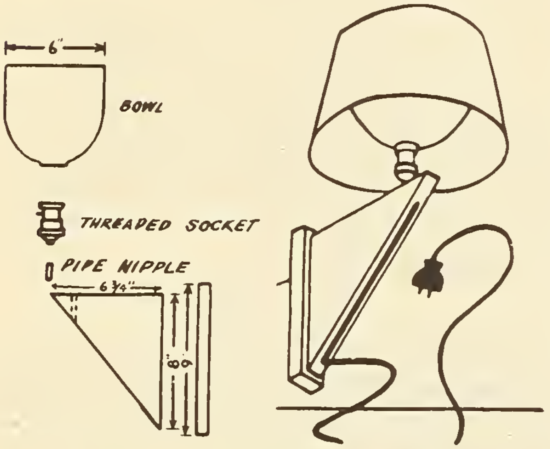
[2] If wood screws are used, they must not be close to the cord. Put them through the under side of the upper part of the base into corners of the larger part of the stem. Screw in, then remove them, glue the base and stem together, replace the screws and tighten them.

[3] If you can find the type of socket which has the cord coming from the side of the socket, instead of the bottom this lamp will be very simple to make.

With this type of socket you will not need the plywood strip. You just run the cord along the top 6¾'' arm of the triangle and through a hole in the base against the wall.

1 outlet plug, preferably of rubber, easy to grasp.
1 screw eye for hanging lamp.
1 threaded plastic diffusing bowl (6″) to fit socket; or shade holder and bowl to fit if threaded type of bowl is not available.
1 10″ shade to fit 6″ bowl.
1 100-watt light bulb.
4 finishing nails.
2 wood screws to attach rectangle base to triangle.
1 flexible cord, 9-feet, not smaller than #18 AWG UL approved.

The 6¾″ arm will be the top arm. (See diagram.)



HERE IS HOW TO PUT THEM TOGETHER

Cut, trim, and plane the triangular support. Cut a groove in the long arm of the triangle for the cord and bore a hole for the pipe nipple on the 6¾″ side of the triangle, 1½″ from the diagonal side. This hole should be at least 5″ from the wall side to allow the shade clearance at the wall for a 10″ shade.

Cut and trim the 9″ rectangular base and attach to the 8″ side of the triangle with finishing nails or wood screws.

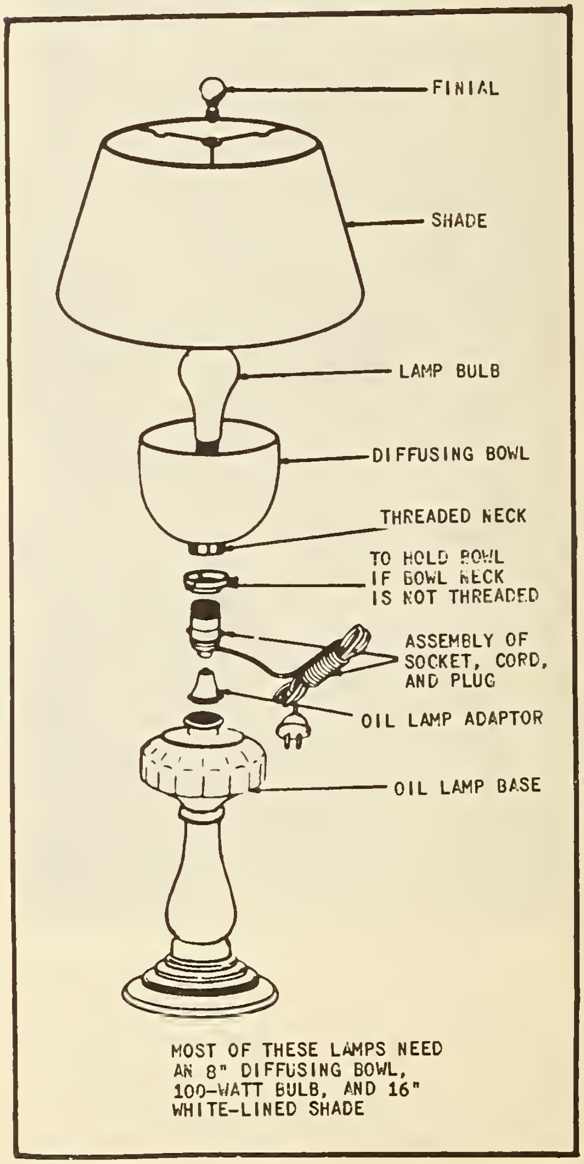
Place the pipe nipple in the hole. Attach the cord to the socket and screw the socket onto the pipe nipple, threading the cord through the nipple and along the groove. Glue the plywood strip over the groove and cord. Use finishing nails if necessary. Fasten screw eye to the top of the base. Place diffusing bowl in position on socket; insert the bulb and place the shade on the lamp. Use a 10″ white-lined shade, or a translucent light-colored one. The wood may be finished in any desired color to match other fixtures or decorations. A light-colored, dull finish is very satisfactory from a lighting viewpoint.

CONVERT YOUR OIL LAMP FOR ELECTRIC USE

Old-fashioned oil lamps can be converted into electric lamps with a few simple parts and materials, available in an electrical appliance, hardware or variety store.

READING LAMP

If your oil lamp base is more than 11″ or 12″ high, you can remodel it into an efficient reading lamp. You can use an ordinary 100- or 150-



MOST OF THESE LAMPS NEED AN 8" DIFFUSING BOWL, 100-WATT BULB, AND 16" WHITE-LINED SHADE watt light bulb in an 8″ or 9⅜″ diffusing reflector bowl, or one of the newer 5″ indirect-light bulbs without a bowl. You can buy either a 150-watt light bulb, or the 50–100–150 watt size which takes a three-position socket. If you use a 6″ or 8″ plastic diffusing bowl, use a 100-watt light bulb.

Oil lamp adaptors that are threaded to screw onto an oil lamp base are made in three sizes: Number 1, ⅞″; number 2, 1¼″; and number 3, 1⅞″.

Number 2 size is the most generally used.

With an ordinary light bulb and diffusing reflector bowl, in addition to the adaptor you will need a socket and cord assembly, shade and finial.

The adaptor, socket and cord may come as a complete unit. If you use the white indirect-light R-40 bulb, you will need a wide harp for the 5″ diameter bulb instead of a diffusing bowl.

You can fill the former oil container of a glass lamp with water tinted to harmonize with the shade or room decorations.

For the most efficient spread of light, the bottom of the shade of your converted lamp should be at least 14″, and better still 16″, in diameter and not less than 14″ from the table. If it is lower, you should set your lamp on a wooden stand that will bring the bottom of the shade to a point between 14″ and 15″ from the table. This stand can be stained or painted to match the base, shade, or furniture.

DECORATIVE LAMPS

A very low oil lamp cannot be converted into a good reading lamp. This type of lamp is for decoration only; occasionally a taller pair, without diffusing bowls, but with good shades may be used for dressing-table lamps.

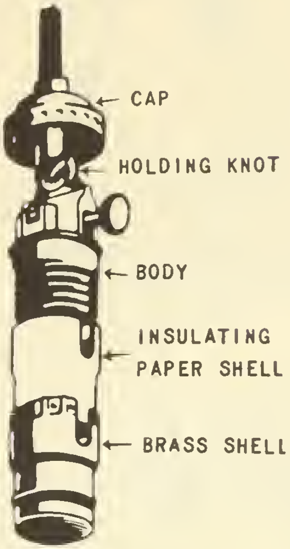
Lamps can be made also from tall bottles, vases, candlesticks, blocks of wood, etc. Unless your old lamp or vase is inherently beautiful, or has sentimental value, do not waste time and money converting it—the results may be disappointing. Usually the cost of conversion might be more profitably applied to buying a new lamp.

WIRING STEPS

Lamp Socket

The socket you will use consists of several main parts. These are identified on the diagram above.

Steps in wiring a socket are shown in drawing. Briefly they are:



Push, using a screwdriver, at the place marked PRESS on the brass shell to take the socket apart.

Remove 1½″ outer insulation and thread cord through cap.

Tie Underwriters' knot in cord.

Remove ½″ insulation from wire ends. Attach to terminal screws on the body of socket. See above.

Reassemble socket.

You will need to separate the socket. To do this, find place marked PRESS on the socket. With the thumb, or a screwdriver, push down on it. Turn lower part slightly to separate cap and shell of the socket.

Split cord end back 2″, or if cord is fabric covered, remove 2″ outer insulation and thread cord through cap.

Tie Underwriters' knot in cord.

Remove ½″ insulation from wire ends. Attach to terminal screws on body of socket. (See diagram.)

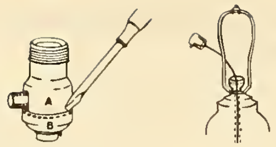
Reassemble socket, finish cord assembly, insert lamp bulb, plug in, and turn on to check.

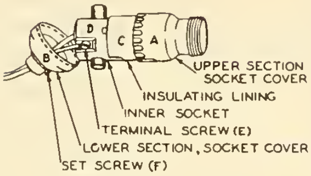
INDIRECT-LIGHT REFLECTOR BULB MODERNIZATION

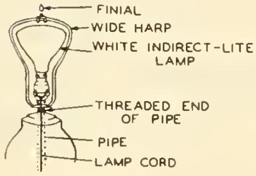
If you are remodeling a table or floor lamp with a narrow harp, to use with a white indirect-light R-40 reflector bulb, you will need to separate the lamp socket as described above and remove wires from the terminal screws.

Then follow these steps:

1. Loosen set screw on the cap nearest the cord. Unscrew and remove lower section or cap of socket cover and narrow harp from the threaded pipe of the lamp base.
2. Thread cord through new wide harp and the lower section (B) of socket cover. Screw lower socket cover (B) tightly down on the threaded pipe to hold the new harp securely in place. Tighten set screw (F). (If a more rigid joint is needed, washers may be added either above or below the new harp.)







3. Rewire socket by looping one wire end around each screw terminal (E). Tighten screws.

4. Pull slack cord through bottom of lamp base. Put inner socket (D) into cap or lower section of socket cover (B).

5. Insert insulating lining (C) around socket. Make sure that it covers both terminal screws (E).

6. Snap top section cover (A) into lower section socket (B).

7. Screw indirect-light reflector bulb into socket. Place shade on threaded pin of harp.

8. Hold shade in place with a finial. Add bushing if finial opening is too large for threaded pin of harp.

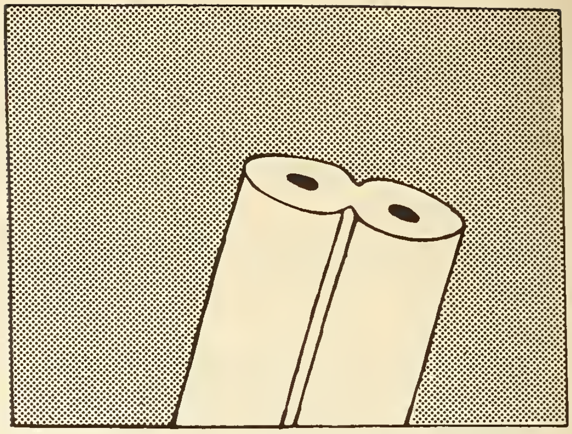
A NEW LAMP

You can also make a new lamp by using these directions. Wide harps which screw onto the threaded part of the socket are sometimes available and easy to use.

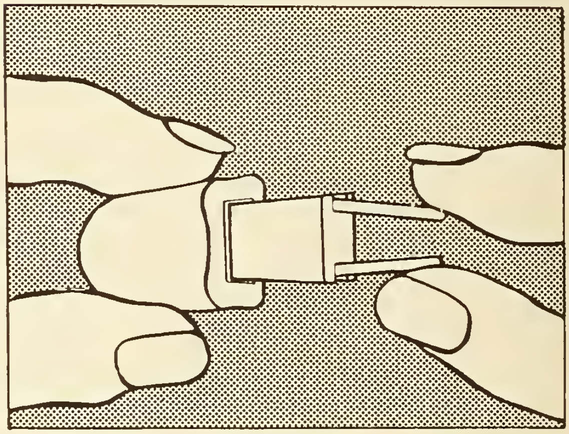
Remember, however, that a diffusing-bowl lamp gives better lighting for long study periods. The indirect-light bulb lamp is satisfactory for casual reading and sewing on dull-finish cloth. The bright bulb may cause glare from shiny fabric or paper.

CONNECTING AUTOMATIC PLUG

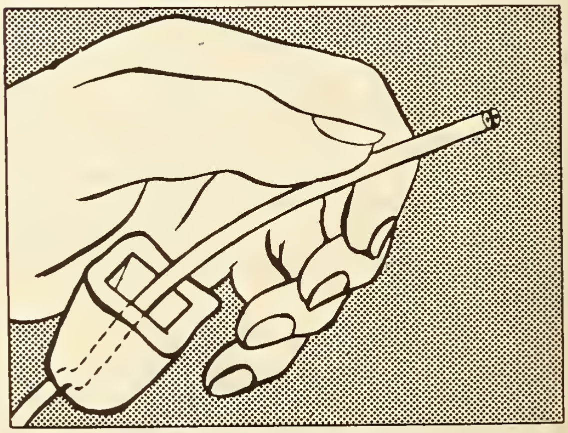
If you use a newer, automatic plug instead of the standard screw cap plug, here are the steps you should follow:



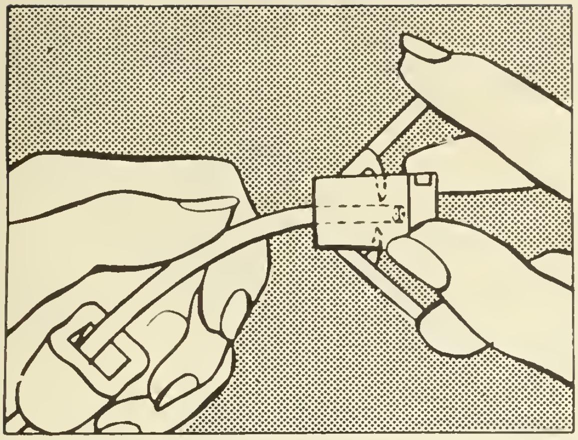
1. Use standard No. 18 parallel cord. Begin with wire as shown. Do not split or strip the wire.



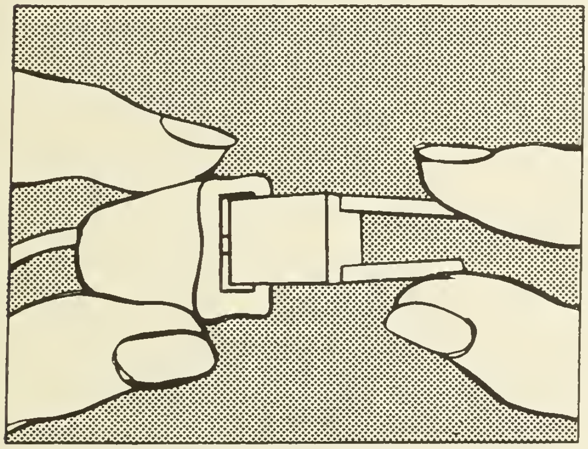
2. Squeeze prongs and remove inner unit from cover.



3. Insert wire through hole in back of cover. Hold end of wire between fingers; allow cover to slide back.



4. Separate prongs and push wire as far as possible into the inner unit.



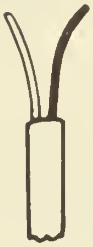
5. Squeeze prongs together and press inner unit firmly into cover.
(Reverse procedure to take apart.)

WIRING STEPS

Attaching Lamp Cord to Outlet Plug

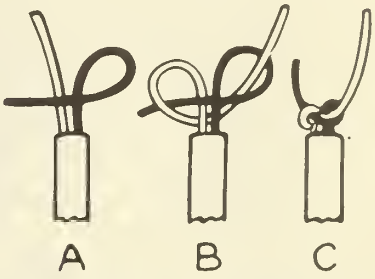
1. Split cord end back 2″ along center crease. If cord is fabric-covered, remove about 2″ of outer fabric.
2. Pass cord through the outlet plug.
3. Tie an Underwriters' knot (or holding knot) in cord. Follow steps A, B, and C.
4. Remove ½″ of insulation from ends of wires. Twist strands of wire tightly.
5. Bring wire around plug prongs and connect to screw in the direction in which screw tightens.
6. Place the insulating cover over the plug.

Attaching the outlet plug:

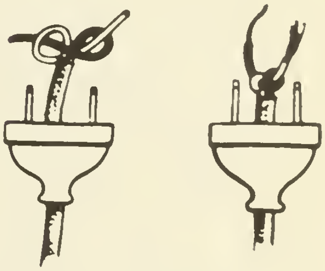


1. If fabric-covered, remove about 1½″ outside insulation from end of cord. Do not cut insulation on small wires inside outer cover.
2. Pass cord through the outlet plug.

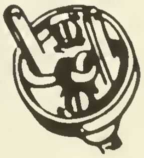
If cord has fabric covering, wind ends of covering with a piece of thread to avoid fray.



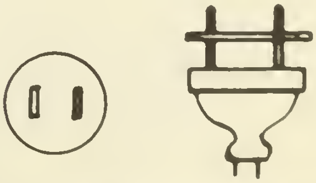
3. Tie an Underwriters' knot (or holding knot) in cord. Follow steps A, B, and C.



4. Remove ½″ of insulation from ends of wires, twist strands of wire tightly.



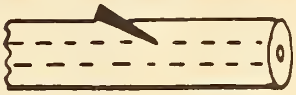
5. Bring wire around plug prongs and connect to screw in the direction in which screw tightens.



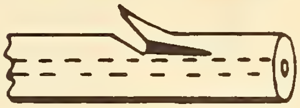
6. Place the insulating cover over the plug.

Removing insulation from a wire and connecting wire to a screw:

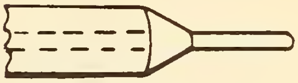
Knife starting at 30° angle to wire.



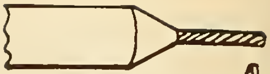
Knife moving parallel to the wire to avoid cutting fine wire strands inside.



Insulation removed, ½″ wire showing.

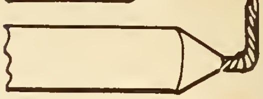


Twist fine strands of wire tightly.

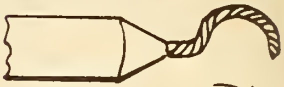


Bend at 90° angle.

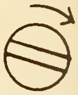
Shape end into hook.



Place hook under the screw so it tends to close as screw turns.



Be sure insulation comes to screw terminal but does not go under it.



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